

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (CURRENTLY AMENDED) An energy transfer assay method for ~~analyzing binding of a sensor polynucleotide binding protein to~~ determining the presence of a target polynucleotide in a sample, the method comprising:

providing a sample that is suspected of containing a target polynucleotide;

providing a conjugated polymer that interacts with the target polynucleotide and upon excitation is capable of transferring energy to a signaling chromophore;

providing a sensor polynucleotide binding protein (PBP) that ~~can bind~~ binds to the target polynucleotide, said sensor PBP ~~conjugated~~ linked to the signaling chromophore;

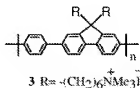
contacting the sample with the sensor PBP and conjugated polymer in a solution under conditions ~~in which~~ that cause a specific binding of the sensor PBP ~~can bind~~ to the target polynucleotide, if present;

applying a light source that ~~can excite~~ excites the conjugated polymer; and

detecting whether light is emitted from the signaling chromophore, thereby indicating binding of the sensor polynucleotide binding protein to the target polynucleotide, which indicates the presence of a target polynucleotide in the sample.

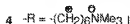
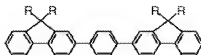
2-6. CANCELLED

7. (WITHDRAWN) The method of claim 1, wherein the conjugated polymer has the structure

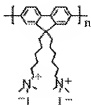


where $n=2-100,000$.

8. (WITHDRAWN) The method of claim 1, wherein the conjugated polymer has the structure

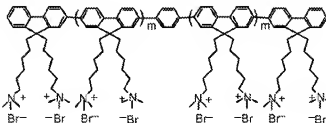


9. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the conjugated polymer has the structure



where $n=2-100,000$.

10. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the conjugated polymer has the structure



where $m=1$ or 2 .

11-12. CANCELLED

13. (CURRENTLY AMENDED) The method of claim 1, wherein the sample is contacted with a plurality of different sensor PBPs, said different sensor PBPs comprising a corresponding different signaling chromophore, wherein each of said different sensor PBPs can selectively bind binds to a corresponding different target polynucleotide.

14. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the chromophore is a fluorophore.

15. (PREVIOUSLY PRESENTED) The method of claim 14, wherein the fluorophore is selected from a semiconductor nanocrystal, a fluorescent dye, and a lanthanide chelate, and a green fluorescent protein.

16. (WITHDRAWN) The method of claim 15, wherein the fluorophore is a semiconductor nanocrystal.

17. (PREVIOUSLY PRESENTED) The method of claim 15, wherein the fluorophore is a fluorescent dye.

18. (PREVIOUSLY PRESENTED) The method of claim 17, wherein the fluorescent dye is fluorescein.

19. (WITHDRAWN) The method of claim 17, wherein the fluorophore is a lanthanide chelate.

20. (WITHDRAWN) The method of claim 1, wherein the target polynucleotide is DNA.

21. (WITHDRAWN) The method of claim 1, wherein the target polynucleotide is RNA.

22. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the sample comprises single-stranded target polynucleotide.

23. (WITHDRAWN) The method of claim 1, wherein the sample comprises double-stranded target polynucleotide.

24. (WITHDRAWN) The method of claim 1, wherein the target polynucleotide is produced via an amplification reaction.

25-26. CANCELLED

27. (PREVIOUSLY PRESENTED) The method of claim 1, wherein light emitted from the signaling chromophore above a threshold level indicates that the target polynucleotide is present in the sample.

28. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the amount of light emitted from the signaling chromophore is quantitated and used to determine the amount of the target polynucleotide in the sample.

29. (WITHDRAWN) The method of claim 12, wherein the fluorophore is a green fluorescent protein.

30. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the target polynucleotide is not amplified.

31. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the method is performed on a substrate.

32. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the amount of light emitted from the signaling chromophore upon excitation of the conjugated polymer is greater than the amount of light obtained upon direct excitation of the signaling chromophore.

33. (CURRENTLY AMENDED) An energy transfer assay method for ~~analyzing binding of a sensor polynucleotide binding protein to~~ determining the presence of a target polynucleotide in a sample, the method comprising:

providing a sample that is suspected of containing a target polynucleotide;

providing a conjugated polymer that interacts with the target polynucleotide and upon excitation is capable of transferring energy to a signaling chromophore;

providing a sensor polynucleotide binding protein (PBP) that ~~can bind~~ binds to the target polynucleotide, said sensor PBP ~~conjugated~~ linked to the signaling chromophore;

contacting the sample with the sensor PBP and the conjugated polymer in a solution under conditions in which the sensor PBP ~~can~~ preferentially and specifically binds ~~bind~~ to the target polynucleotide, if present;

applying a light source that ~~can excite~~ excites the conjugated polymer; and

detecting whether light is emitted from the signaling chromophore, thereby indicating binding of the sensor polynucleotide binding protein to the target polynucleotide, which indicates the presence of a target polynucleotide in the sample.

34. (CURRENTLY AMENDED) A method of performing energy resonance transfer comprising (a) combining a conjugated polymer, a polynucleotide binding protein and a signaling chromophore with a sample suspecting of containing a target polynucleotide under conditions in which the polynucleotide binding protein ~~can bind~~ binds to the target to form a complex, and (b) detecting emission from the signaling chromophore upon excitation of the conjugated polymer indicating complex formation, wherein the emission is larger than that obtained from direct excitation of the signaling chromophore.

35. (PREVIOUSLY PRESENTED) The method of claim 34, wherein the emission is at least 10 times larger than that obtained from direct excitation of the signaling chromophore.

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36. (PREVIOUSLY PRESENTED) The method of claim 34, wherein the emission is at least 25 times larger than that obtained from direct excitation of the signaling chromophore.

37. (PREVIOUSLY PRESENTED) The method of claim 34, wherein the emission is at least 30 times larger than that obtained from direct excitation of the signaling chromophore.